

# Extreme Environment SiC Wireless Sensor Suite for Nuclear Thermal Propulsion Engines, Phase I

Completed Technology Project (2011 - 2011)



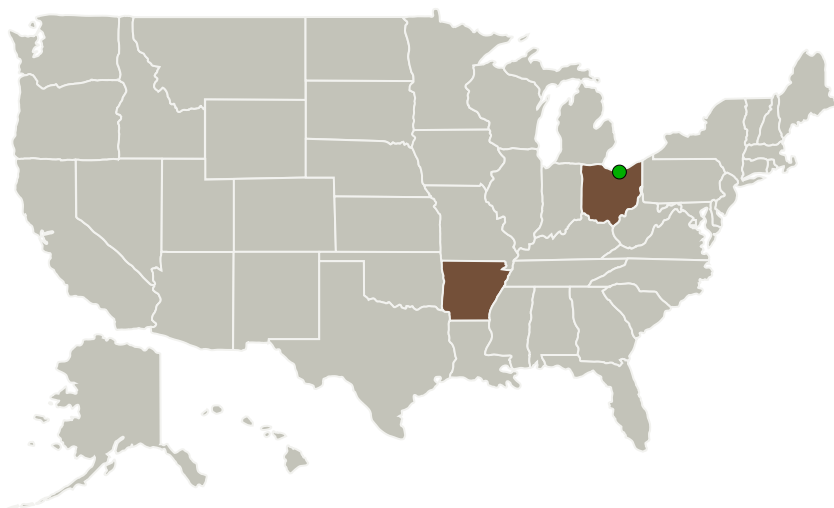
## Project Introduction

In this program, APEI, Inc. will build on successful demonstrations of SiC-based wireless transmitter designs in high temperature and high mechanical load environments to develop silicon carbide (SiC) based integrated wireless sensor-transmitter suites for extreme temperature operation in nuclear thermal propulsion (NTP) engines. These sensor suites will allow for the real-time monitoring of critical engine components, reducing the risk of catastrophic failure and decreasing the inherent risk associated with NTP operation. Arkansas Power Electronics International, Inc. (APEI, Inc.) will prove the feasibility of the concept and design through the successful demonstration of a prototype SiC wireless sensor suite operating in excess of 450

o

C at the conclusion of Phase I.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Arkansas Power Electronics International, Inc.	Lead Organization	Industry	Fayetteville, Arkansas
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio



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## Primary U.S. Work Locations

Arkansas

Ohio

## Project Transitions

 **February 2011:** Project Start

 **September 2011:** Closed out

### Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/140225>)

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

Arkansas Power Electronics International, Inc.

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

Carlos Torrez

### Principal Investigator:

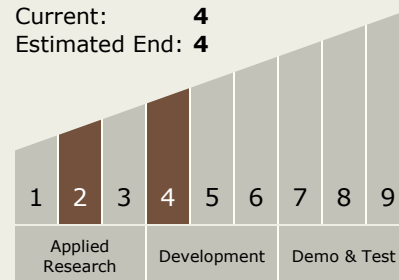
Jie Yang

## Technology Maturity (TRL)

Start: 2

Current: 4

Estimated End: 4



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## Technology Areas

### Primary:

- TX01 Propulsion Systems
  - └ TX01.4 Advanced Propulsion
    - └ TX01.4.4 Other Advanced Propulsion Approaches

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System